

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1-10 and non-elected claims 11-35 are requested to be cancelled without prejudice or disclaimer. New claims 36-45 directed to the elected species previously recited in claims 1-10 are being added. Support for the new claims may be found throughout the specification, such as on page 15, line 14 to page 18, line 15 of the specification and in Figures 4-7. No new matter was added. After amending the claims as set forth above, claims 36-45 are now pending in this application.

Claims 1-10 were rejected under sections 102(e) and 103(a) over Majumdar (US '820 or WO '820). Claims 1-10 have been cancelled rendering the rejection moot.

New independent claims 36 and 41 are neither anticipated by nor obvious over Majumdar because Majumdar does not teach or suggest all limitations of claims 36 and 41.

Claims 36 and 41 recite that a nanowhisker (also known as a nanowire) and a bulk semiconductor enclosure region form a pn junction. In other words, a first conductivity nanowire and the bulk semiconductor enclosure of an opposite conductivity type form a pn junction. The term "bulk" means a three dimensional material rather than a quasi-one dimensional nanowire shell.

In contrast, Majumdar does not teach that a bulk semiconductor region forms a part of a pn junction. Majumdar teaches core / shell type nanowires comprising a core region 14 and a surrounding shell or sheath region 16, as shown in Figure 2 (as well as in Figures 4 to 9) of Majumdar. However, the shell or sheath region 16 of Majumdar is part of the nanowire. The shell or sheath region 16 is not a bulk semiconductor material. Thus, Majumdar teaches to form a radial pn junction between an inner core and an outer sheath of the same nanowire. Majumdar does not teach to form a pn junction between a nanowire and a separate bulk material, as recited in claims 36 and 41. Thus, claims 36 and 41 are believed to be patentable over Majumdar.

Likewise, Majumdar does not teach or suggest the limitations of dependent claims 37-40 and 42-45. For example, claims 37 and 42 recite that the nanowhisker is intrinsically first conductivity type, which can be achieved by providing an excess of Group III material in a III-V nanowhisker or when the nanowhisker has a first conductivity type in the as-grown state, for example by incorporating first conductivity type dopant from the first conductivity type substrate during growth of the nanowire without adding a separate doping step.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By 

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